The Claims:

1. (Original) A device for scanning a surface comprising optically detectable marks along a scan line, which device comprises a radiation source for emitting a radiation beam, an objective system for guiding the radiation beam to the surface, a radiation-sensitive detection system for receiving radiation from the surface and an electronic circuit for processing output signals of the detection system, characterized in that the detection system comprises a plurality of detectors, each detector having an output for providing a detector signal, and in that the device comprises an electronic circuit for forming a time difference between corresponding parts of the detector signals relating to passage of the radiation beam over one of the marks and for generating from the time difference a signal representing a wavefront aberration of the radiation beam.

2. (Previously presented) Device according to Claim 1, the detection system comprises four consecutive sub-detectors a, b, c and d in the direction of the scan line, and the signal is proportional to

$$t(a-b) - t(c-d),$$

where t(n-m) is the time difference between detector signals of sub-detectors m and n.

3. (Previously presented) Device according to Claim 1, the detection system comprises four consecutive sub-detectors a, b, c and d in the direction of the scan line, and the signal is proportional to

$$t(a-b) + t(c-d),$$

where t(n-m) is the time difference between detector signals of sub-detectors m and n.

4. (Original) Device according to Claim 1, wherein the detectors are arranged at both sides of a dividing line, extending effectively in a direction perpendicular to the scan line.

5. (Original) Device according to Claim 1, wherein the detectors are arranged at both sides of a dividing line, extending effectively in a direction perpendicular to the scan line, and comprising a servo circuit arranged for wobbling the position of the radiation beam in a direction perpendicular to the scan line.

6. (Original) Device according to Claim 1 arranged for scanning optical record carriers.

7. (Original) A device for scanning a surface comprising optically detectable marks along a scan line, which device comprises a radiation source for emitting a radiation beam, an objective system for guiding the radiation beam to the surface, a radiation-sensitive detection system for receiving radiation from the surface and an electronic circuit for processing output signals of the detection system, characterized in that the detection system comprises eight detectors arranged in four quadrants, each quadrant being split at a radius in an inner part and an outer part, each detector having an output for providing a detector signal, and in that the device comprises an electronic circuit for forming a time difference between corresponding parts of the detector signals relating to passage of the radiation beam over one of the marks and for generating from the time difference a focus error signal.

8. (Previously presented) Device according to Claim 7, wherein the focus signal is proportional to $(t_{a1} + t_{d1}) + (t_{a2} + t_{d2}) - (t_{b2} + t_{c2}) - (t_{b1} + t_{c1})$
where t_e is a time difference between corresponding parts of detector signal e relating to passage of the radiation beam over one of the marks and a reference signal, e designating a detector signal label a1, a2, b1, b2, c1, c2, d1 or d2, the detector signals labelled '1' and '2' pertaining to detectors in the outer part and inner part, respectively of a quadrant, the detectors in four subsequent quadrants being labelled 'a', 'b', 'c' and 'd'.

9. (Original) A method for scanning a surface comprising optically detectable marks along a scan line, in which method a radiation beam is guided to the surface, and a

radiation-sensitive detection system receives radiation from the surface, characterized in that the detection system comprises a plurality of detectors, each detector providing a detector signal, and in that a time difference is determined between corresponding parts of the detector signals relating to passage of the radiation beam over one of the marks and a signal representing a wavefront deviation of the radiation beam is formed from the time difference.

10. (Original) A method for scanning a surface comprising optically detectable marks along a scan line, in which method a radiation beam is guided to the surface, and a radiation-sensitive detection system receives radiation from the surface, characterized in that the detection system comprises eight detectors arranged in four quadrants, each quadrant being split at a radius in an inner part and an outer part, each detector providing a detector signal, and in that a time difference is determined between corresponding parts of the detector signals relating to passage of the radiation beam over one of the marks and a focus error signal is formed from the time difference.

11. (Cancelled)

12. (Previously presented) The device according to Claim 1, wherein the plurality of detectors includes detectors a and c arranged on a first, but not a second, side of a dividing line extending effectively in a direction parallel to the scan line, detector a being arranged adjacent the dividing line and detector c being arranged around detector a, detectors b and d arranged to be on the second, but not the first, side of the dividing line, detector b being arranged adjacent the dividing line and detector d being arranged around detector b, the time difference signal being proportional to

$$t_a - t_b - t_c + t_d,$$

each of t_a, t_b, t_c and t_d being a time difference between the detector signal of the respective detector and a corresponding clock signal.

13. (Previously presented) The device according to Claim 1, wherein the plurality of detectors includes detectors a and c arranged on a first, but not a second, side of a dividing line extending effectively in a direction parallel to the scan line, detector a being arranged adjacent the dividing line and detector c being arranged around detector a, detectors b and d arranged to be on the second, but not the first, side of the dividing line, detector b being arranged adjacent the dividing line and detector d being arranged around detector b, the time difference signal being proportional to

$$t_a - t_b + t_c - t_d,$$

each of t_a, t_b, t_c and t_d being a time difference between the detector signal of the respective detector and a corresponding clock signal.

14. (Previously presented) The device according to Claim 1, wherein the plurality of detectors includes detectors a and c arranged on a first, but not a second, side of a dividing line extending effectively in a direction parallel to the scan line, detector a being arranged adjacent the dividing line and detector c being arranged around detector a, detectors b and d arranged to be on the second, but not the first, side of the dividing line, detector b being arranged adjacent the dividing line and detector d being arranged around detector b, a second time difference signal being proportional to

$$t_a + t_b - t_c - t_d,$$

each of t_a, t_b, t_c and t_d being a time difference between the detector signal of a respective detector and a corresponding clock signal.

15. (Previously presented) The device according to Claim 14, wherein detectors a and b are each semi-circularly shaped and bounded on one side by the dividing line.

16. (Previously presented) The device according to Claim 1, wherein detectors are arranged to be in one of four quadrants, the quadrants arranged counterclockwise being a, b, c and d, each quadrant having a detector in an outer portion 1 and another detector in an inner portion 2, the time difference signal being proportional to

$$(t_{a1} + t_{d1}) - (t_{a2} + t_{d2}) + (t_{b2} + t_{c2}) - (t_{b1} + t_{c1}),$$

each of t_{a1}, t_{a2}, t_{b1}, t_{b2}, t_{c1}, t_{c2}, t_{d1} and t_{d2} being a time difference between the detector signal of a respective detector and a corresponding clock signal, the respective detector being arranged in the quadrant portion indicated by subscript.

17. (Previously presented) The device according to Claim 1, wherein detectors are arranged to be in one of four quadrants, the quadrants arranged counterclockwise being a, b, c and d, each quadrant having a detector in an outer portion 1 and another detector in an inner portion 2, the time difference signal being proportional to

$$(t_{a1} + t_{d1}) - (t_{a2} + t_{d2}) - (t_{b2} + t_{c2}) + (t_{b1} + t_{c1}),$$

each of t_{a1}, t_{a2}, t_{b1}, t_{b2}, t_{c1}, t_{c2}, t_{d1} and t_{d2} being a time difference between the detector signal of a respective detector and a corresponding clock signal, the respective detector being arranged in the quadrant portion indicated by subscript.

18. (Previously presented) The device according to Claim 1, wherein detectors are arranged to be in one of four quadrants, the quadrants arranged counterclockwise being a, b, c and d, each quadrant having a detector in an outer portion 1 and another detector in an inner portion 2, a second time difference signal being proportional to

$$(t_{a1} + t_{d1}) + (t_{a2} + t_{d2}) - (t_{b2} + t_{c2}) - (t_{b1} + t_{c1}),$$

each of t_{a1}, t_{a2}, t_{b1}, t_{b2}, t_{c1}, t_{c2}, t_{d1} and t_{d2} being a time difference between the detector signal of a respective detector and a corresponding clock signal, the respective detector being arranged in the quadrant portion indicated by subscript.